ASROCK

AM1H-ITX

User Manual

Version 1.1
Published October 2014
Copyright©2014 ASRock INC. All rights reserved.

Copyright Notice:

No part of this documentation may be reproduced, transcribed, transmitted, or translated in any language, in any form or by any means, except duplication of documentation by the purchaser for backup purpose, without written consent of ASRock Inc.

Products and corporate names appearing in this documentation may or may not be registered trademarks or copyrights of their respective companies, and are used only for identification or explanation and to the owners' benefit, without intent to infringe.

Disclaimer:

Specifications and information contained in this documentation are furnished for informational use only and subject to change without notice, and should not be constructed as a commitment by ASRock. ASRock assumes no responsibility for any errors or omissions that may appear in this documentation.

With respect to the contents of this documentation, ASRock does not provide warranty of any kind, either expressed or implied, including but not limited to the implied warranties or conditions of merchantability or fitness for a particular purpose.

In no event shall ASRock, its directors, officers, employees, or agents be liable for any indirect, special, incidental, or consequential damages (including damages for loss of profits, loss of business, loss of data, interruption of business and the like), even if ASRock has been advised of the possibility of such damages arising from any defect or error in the documentation or product.

The terms HDMI™ and HDMI High-Definition Multimedia Interface, and the HDMI logo are trademarks or registered trademarks of HDMI Licensing LLC in the United States and other countries.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

CALIFORNIA, USA ONLY

The Lithium battery adopted on this motherboard contains Perchlorate, a toxic substance controlled in Perchlorate Best Management Practices (BMP) regulations passed by the California Legislature. When you discard the Lithium battery in California, USA, please follow the related regulations in advance.
"Perchlorate Material-special handling may apply, see www.dtsc.ca.gov/hazardouswaste/perchlorate"

ASRock Website: http://www.asrock.com

Contents

Chapter 1 Introduction **1**

1.1 Package Contents 1

1.2 Specifications 2

1.3 Unique Features 6

1.4 Motherboard Layout 10

1.5 I/O Panel 12

Chapter 2 Installation **14**

2.1 Installing the CPU 15

2.2 Installing the CPU Fan and Heatsink 17

2.3 Installing Memory Modules (DIMM) 18

2.4 Expansion Slots (PCI Express Slots) 20

2.5 Jumpers Setup 21

2.6 Onboard Headers and Connectors 22

Chapter 3 Software and Utilities Operation **26**

3.1 Installing Drivers 26

3.2 A-Tuning 27

3.3 Start8 30

Chapter 4 UEFI SETUP UTILITY **33**

4.1 Introduction 33

4.1.1 UEFI Menu Bar 33

4.1.2 Navigation Keys 34

4.2 Main Screen 35

4.3 OC Tweaker Screen 36
4.4 Advanced Screen 39
4.4.1 CPU Configuration 40
4.4.2 Chipset Configuration 41
4.4.3 Storage Configuration 43
4.4.4 Super IO Configuration 44
4.4.5 ACPI Configuration 45
4.4.6 USB Configuration 47
4.4.7 Trusted Computing 48
4.5 Tools 49
4.6 Hardware Health Event Monitoring Screen 52
4.7 Boot Screen 53
4.8 Security Screen 56
4.9 Exit Screen 57

Chapter 1 Introduction

Thank you for purchasing ASRock AM1H-ITX motherboard, a reliable motherboard produced under ASRock's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock's commitment to quality and endurance.

In this manual, Chapter 1 and 2 contains the introduction of the motherboard and step-by-step installation guides. Chapter 3 contains the operation guide of the software and utilities. Chapter 4 contains the configuration guide of the BIOS setup.

Because the motherboard specifications and the BIOS software might be updated, the content of this manual will be subject to change without notice. In case any modifications of this manual occur, the updated version will be available on ASRock's website without further notice. If you require technical support related to this motherboard, please visit our website for specific information about the model you are using. You may find the latest VGA cards and CPU support list on ASRock's website as well. ASRock website http://www.asrock.com.

1.1 Package Contents

- ASRock AM1H-ITX Motherboard (Mini-ITX Form Factor)
- ASRock AM1H-ITX Quick Installation Guide
- ASRock AM1H-ITX Support CD
- 2 x Serial ATA (SATA) Data Cables (Optional)
- 1 x Serial ATA (SATA) Power Cable (Optional)
- 1 x WiFi Module Screw
- 1 x I/O Panel Shield

1.2 Specifications

Platform	• Mini-ITX Form Factor • All Solid Capacitor design
CPU	• Supports AMD AM1 Socket A-series and E-series Quad-Core/Dual-Core APU up to 25W
Memory	• 2 x DDR3 DIMM Slots • Supports DDR3 1600/1333/1066 non-ECC, un-buffered memory • Max. capacity of system memory: 16GB (see CAUTION1)
Expansion Slot	• 1 x PCI Express 2.0 x16 Slot (PCIE1 @ x4 mode) • 1 x mini-PCI Express Slot * Due to the power limitation and PCIe bandwidth (x4), the VGA card is not supported.
Graphics	• Integrated AMD Radeon™ R3 Series Graphics in A-series / E-series APU • DirectX 11.1, Pixel Shader 5.0 • Max. shared memory 4GB • Four graphics output options: D-Sub, DVI-D, HDMI and DisplayPort 1.2 (see CAUTION2) • Supports HDMI with max. resolution up to 4K × 2K (4096x2160) @ 24Hz or 4K × 2K (3840x2160) @ 30Hz • Supports DVI-D with max. resolution up to 1920x1200 @ 60Hz • Supports D-Sub with max. resolution up to 2048x1536 @ 60Hz • Supports DisplayPort 1.2 with max. resolution up to 4K × 2K (4096x2160) @ 30Hz • Supports Auto Lip Sync, Deep Color (12bpc), xvYCC and HBR (High Bit Rate Audio) with HDMI Port (Compliant HDMI monitor is required) • Supports HDCP with DVI-D, HDMI and DisplayPort 1.2 Ports • Supports Full HD 1080p Blu-ray (BD) playback with DVI-D, HDMI and DisplayPort 1.2 Ports

Audio	• 7.1 CH HD Audio with Content Protection (Realtek ALC892 Audio Codec) • Premium Blu-ray Audio support • Supports Full Spike Protection
LAN	• PCIE x1 Gigabit LAN 10/100/1000 Mb/s • Realtek RTL8111GR • Supports Realtek RealWoW! Technology • Supports Wake-On-LAN • Supports Full Spike Protection • Supports LAN Cable Detection • Supports Energy Efficient Ethernet 802.3az • Supports PXE
Rear Panel I/O	• 1 x DC Jack • 1 x PS/2 Mouse/Keyboard Port • 1 x D-Sub Port • 1 x DVI-D Port • 1 x HDMI Port • 1 x DisplayPort 1.2 • 1 x Optical SPDIF Out Port • 2 x USB 2.0 Ports (Supports Full Spike Protection) • 2 x USB 3.0 Ports (Supports Full Spike Protection) • 1 x RJ-45 LAN Port with LED (ACT/LINK LED and SPEED LED) • HD Audio Jacks: Rear Speaker / Central / Bass / Line in / Front Speaker / Microphone
Storage	• 2 x SATA3 6.0 Gb/s Connectors by AMD AM1 Series Socket 25W Quad-Core APU, support NCQ, AHCI and Hot Plug • 2 x SATA3 6.0 Gb/s Connectors by ASMedia ASM1061, support NCQ, AHCI and Hot Plug

Connector	• 1 x COM Port Header • 1 x Chassis Intrusion Header • 1 x TPM Header • 1 x CPU Fan Connector (4-pin) • 1 x Chassis Fan Connector (4-pin) • 1 x Power Fan Connector (3-pin) • 1 x 24 pin ATX Power Connector • 1 x SATA Power Connector • 1 x Front Panel Audio Connector • 2 x USB 2.0 Headers (Support 4 USB 2.0 ports) (Supports Full Spike Protection) • 1 x USB 3.0 Header by ASMedia ASM1042A (Supports 2 USB 3.0 ports) (Supports Full Spike Protection)
BIOS Feature	• 32Mb AMI UEFI Legal BIOS with GUI support • Supports "Plug and Play" • ACPI 1.1 compliance wake up events • Supports jumperfree • SMBIOS 2.3.1 support • DRAM Voltage multi-adjustment
Support CD	• Drivers, Utilities, AntiVirus Software (Trial Version), Google Chrome Browser and Toolbar, Start8 (30 days trial)
Hardware Monitor	• CPU/Chassis temperature sensing • CPU/Chassis/Power Fan Tachometer • CPU Quiet Fan • CPU Fan multi-speed control • CASE OPEN detection • Voltage monitoring: +12V, +5V, +3.3V, Vcore
OS	• Microsoft® Windows® 8.1 32-bit / 8.1 64-bit / 8 32-bit / 8 64-bit / 7 32-bit / 7 64-bit / XP 32-bit / XP 64-bit
Certifications	• FCC, CE, WHQL • ErP/EuP ready (ErP/EuP ready power supply is required)

** For detailed product information, please visit our website: http://www.asrock.com*

Please realize that there is a certain risk involved with overclocking, including adjusting the setting in the BIOS, applying Untied Overclocking Technology, or using third-party overclocking tools. Overclocking may affect your system's stability, or even cause damage to the components and devices of your system. It should be done at your own risk and expense. We are not responsible for possible damage caused by overclocking.

1. *Due to the operating system limitation, the actual memory size may be less than 4GB for the reservation for system usage under Windows® 8 / 7 / XP. For Windows® 64-bit OS with 64-bit CPU, there is no such limitation. You can use ASRock XFast RAM to utilize the memory that Windows® cannot use.*
2. *HDMI and DisplayPort 1.2 cannot output at the same time. You can only choose either one of them. Please refer to the BIOS setup option "HDMI/DP Switch" on page 42.*

1.3 Unique Features

ASRock A-Tuning

A-Tuning is ASRock's multi purpose software suite with a new interface, more new features and improved utilities, including XFast RAM, Dehumidifier, Good Night LED, FAN-Tastic Tuning and a whole lot more.

ASRock Instant Boot

ASRock Instant Boot allows you to turn on your PC in just a few seconds, provides a much more efficient way to save energy, time, money, and improves system running speed for your system. It leverages the S3 and S4 ACPI features which normally enable the Sleep/Standby and Hibernation modes in Windows® to shorten boot up time. By calling S3 and S4 at specific timing during the shutdown and startup process, Instant Boot allows you to enter your Windows® desktop in a few seconds.

ASRock Instant Flash

ASRock Instant Flash is a BIOS flash utility embedded in Flash ROM. This convenient BIOS update tool allows you to update the system BIOS in a few clicks without preparing an additional floppy diskette or other complicated flash utility. Just save the new BIOS file to your USB storage and launch this tool by pressing <F6> or <F2> during POST to enter the BIOS setup menu to access ASRock Instant Flash. Please be noted that the USB flash drive or hard drive must use FAT32/16/12 file system.

ASRock APP Charger

Simply by installing the ASRock APP Charger makes your iPhone/iPad/iPod Touch charge up to 40% faster than before on your computer. ASRock APP Charger allows you to quickly charge many Apple devices simultaneously and even supports continuous charging when your PC enters into Suspend to RAM (S3), hibernation mode (S4) or power off (S5).

ASRock XFast LAN

ASRock XFast LAN provides faster internet access, which includes the benefits listed below. LAN Application Prioritization: You can configure your application's priority ideally and add new programs to the list. Lower Latency in Game: After setting online game's priority higher, it can lower the latency in games. Traffic Shaping: You can watch Youtube HD videos and download simultaneously. Real-Time Analysis of Your Data: With the status window, you can easily recognize which data streams you are currently transferring.

ASRock XFast RAM

ASRock XFast RAM is included in A-Tuning. It fully utilizes the memory space that cannot be used under Windows® 32-bit operating systems. ASRock XFast RAM shortens the loading time of previously visited websites, making web surfing faster than ever. And it also boosts the speed of Adobe Photoshop 5 times faster. Another advantage of ASRock XFast RAM is that it reduces the frequency of accessing your SSDs or HDDs in order to extend their lifespan.

ASRock Crashless BIOS

ASRock Crashless BIOS allows users to update their BIOS without fear of failing. If power loss occurs during the BIOS updating process, ASRock Crashless BIOS will automatically finish the BIOS update procedure after regaining power. Please note that BIOS files need to be placed in the root directory of your USB disk. Only USB 2.0 ports support this feature.

ASRock OMG (Online Management Guard)

Administrators are able to establish an internet curfew or restrict internet access at specified times via OMG. You may schedule the starting and ending hours of internet access granted to other users. In order to prevent users from bypassing OMG, guest accounts without permission to modify the system time are required.

ASRock Internet Flash

ASRock Internet Flash downloads and updates the latest UEFI firmware version from our servers for you without entering Windows® OS. Please setup network configuration before using Internet Flash.

ASRock UEFI Tech Service

Contact ASRock Tech Service by sending a support request from the UEFI setup utility if you are having trouble with your personal computer. Users may try to choose the category of the issue they have encountered, describe the problem in detail, and then attach an optional picture or log file for our technical support team.

ASRock On/Off Play Technology

ASRock On/Off Play Technology allows users to enjoy the great audio experience from the portable audio devices, such like MP3 player or mobile phone to your PC, even when the PC is turned off (or in ACPI S5 mode)! This motherboard also provides a free 3.5mm audio cable (optional) that ensures users the most convenient computing environment.

ASRock Dehumidifier Function

Users may prevent motherboard damages due to dampness by enabling "Dehumidifier Function". When enabling Dehumidifier Function, the computer will power on automatically to dehumidify the system after entering S4/S5 state.

ASRock Easy Driver Installer

For users that don't have an optical disk drive to install the drivers from our support CD, Easy Driver Installer is a handy tool in the UEFI that installs the LAN driver to your system via an USB storage device, then downloads and installs the other required drivers automatically.

ASRock Interactive UEFI

ASRock Interactive UEFI is a blend of system configuration tools, cool sound effects and stunning visuals. The unprecedented UEFI provides a more attractive interface and more amusment.

ASRock Fast Boot

With ASRock's exclusive Fast Boot technology, it takes less than 1.5 seconds to logon to Windows 8 from a cold boot. No more waiting! The speedy boot will completely change your user experience and behavior.

ASRock Restart to UEFI

Windows® 8 brings the ultimate boot up experience. The lightning boot up speed makes it hard to access the UEFI setup. ASRock Restart to UEFI allows users to enter the UEFI automatically when turning on the PC. By enabling this function, the PC will enter the UEFI directly after you restart.

ASRock USB Key

In a world where time is money, why waste precious time everyday typing usernames to log in to Windows? Why should we even bother memorizing those foot long passwords? Just plug in the USB Key and let your computer log in to windows automatically!

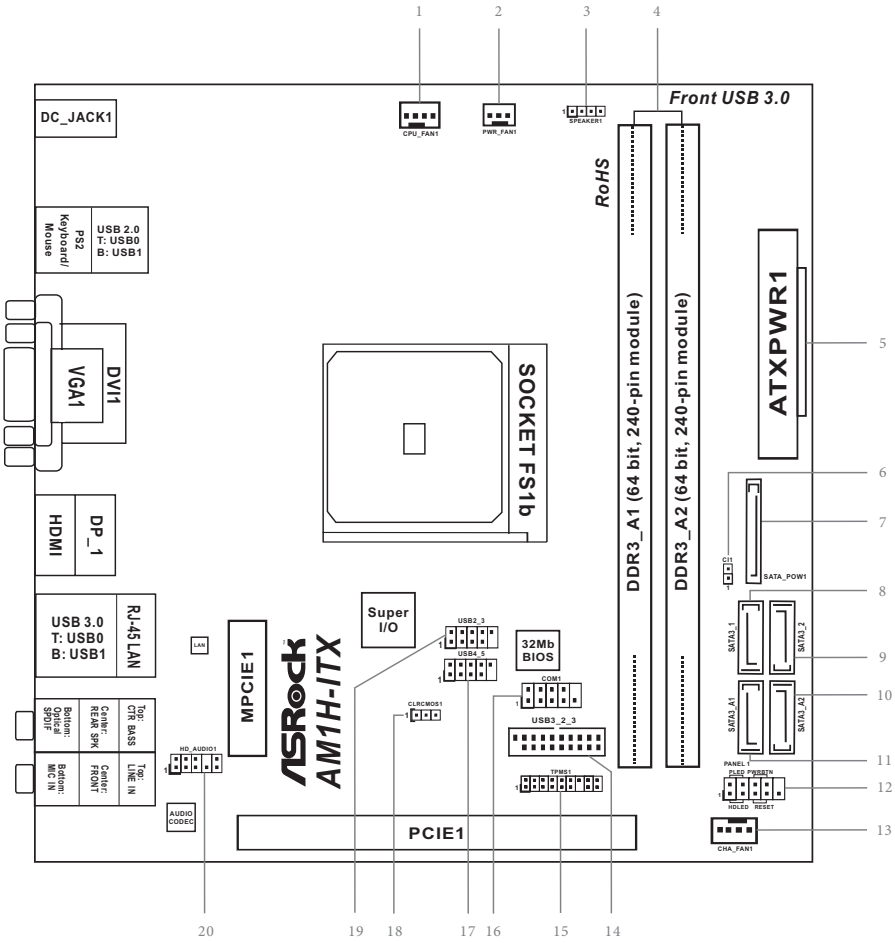
ASRock FAN-Tastic Tuning

ASRock FAN-Tastic Tuning is included in A-Tuning. Configure up to five different fan speeds using the graph. The fans will automatically shift to the next speed level when the assigned temperature is met.

ASRock Good Night LED

ASRock Good Night LED technology offers you a better sleeping environment by extinguishing the unessential LEDs. By enabling Good Night LED in the BIOS, the Power/LAN LEDs will be switched off when the system is powered on. Good Night LED will automatically switch off the Power and LAN LEDs when the system enters into Standby/Hibernation mode as well.

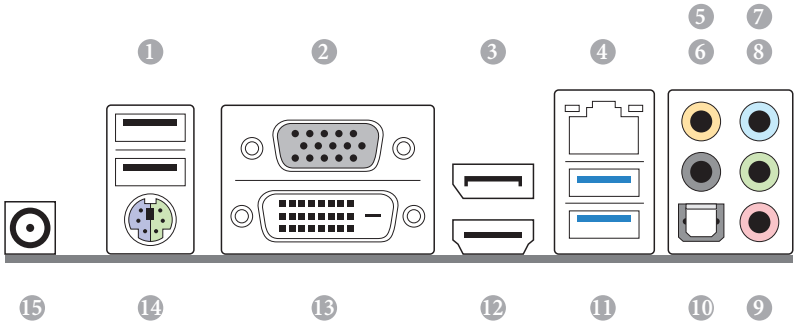
1.4 Motherboard Layout



English

No.	Description
1	CPU Fan Connector (CPU_FAN1)
2	Power Fan Connector (PWR_FAN1)
3	Chassis Speaker Header (SPEAKER1)
4	2 x 240-pin DDR3 DIMM Slots (DDR3_A1, DDR3_A2)
5	ATX Power Connector (ATXPWR1)
6	Chassis Intrusion Header (CI1)
7	SATA Power Connector (SATA_POW1)
8	SATA3 Connector (SATA3_1)
9	SATA3 Connector (SATA3_2)
10	SATA3 Connector (SATA3_A2)
11	SATA3 Connector (SATA3_A1)
12	System Panel Header (PANEL1)
13	Chassis Fan Connector (CHA_FAN1)
14	USB 3.0 Header (USB3_2_3)
15	TPM Header (TPMS1)
16	COM Port Header (COM1)
17	USB 2.0 Header (USB4_5)
18	Clear CMOS Jumper (CLRCMOS1)
19	USB 2.0 Header (USB2_3)
20	Front Panel Audio Header (HD_AUDIO1)

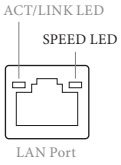
1.5 I/O Panel



No.	Description	No.	Description
1	USB 2.0 Ports (USB01)	9	Microphone (Pink)
2	D-Sub Port	10	Optical SPDIF Out Port
3	DisplayPort 1.2*	11	USB 3.0 Ports (USB3_0_1)
4	LAN RJ-45 Port**	12	HDMI Port*
5	Central / Bass (Orange)	13	DVI-D Port
6	Rear Speaker (Black)	14	PS/2 Mouse/Keyboard Port
7	Line In (Light Blue)	15	DC Jack****
8	Front Speaker (Lime)***		

** HDMI and DisplayPort 1.2 cannot output at the same time. You can only choose either one of them. Please refer to the BIOS setup option "HDMI/DP Switch" on page 42.*

*** There are two LEDs on each LAN port. Please refer to the table below for the LAN port LED indications.*



Activity / Link LED		Speed LED	
Status	Description	Status	Description
Off	No Link	Off	10Mbps connection
Blinking	Data Activity	Orange	100Mbps connection
On	Link	Green	1Gbps connection

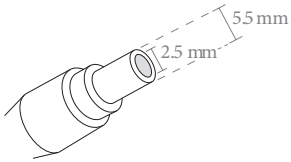
English

**** If you use a 2-channel speaker, please connect the speaker's plug into "Front Speaker Jack". See the table below for connection details in accordance with the type of speaker you use.*

Audio Output Channels	Front Speaker (No. 8)	Rear Speaker (No. 6)	Central / Bass (No. 5)	Line In or Side Speaker (No. 7)
2	V	--	--	--
4	V	V	--	--
6	V	V	V	--
8	V	V	V	V

To enable Multi-Streaming, you need to connect a front panel audio cable to the front panel audio header. After restarting your computer, you will find the "Mixer" tool on your system. Please select "Mixer ToolBox" , click "Enable playback multi-streaming", and click "ok". Choose "2CH", "4CH", "6CH", or "8CH" and then you are allowed to select "Realtek HDA Primary output" to use the Rear Speaker, Central/ Bass, and Front Speaker, or select "Realtek HDA Audio 2nd output" to use the front panel audio.

***** Please use a 19V power adapter for the DC jack. This jack accepts dual barrel plugs with an inner diameter of 2.5 mm and an outer diameter of 5.5 mm, where the inner contact is +19V (±10%) DC and the shell is GND.*



Please refer to below hardware configuration for the estimated adapter power.

DRAM	HDD	Estimated Adapter Power
1	1	41W
1	2	56W
2	2	60W

Due to the power limitation and PCIe bandwidth (x4), the VGA card is not supported.

This motherboard is available with support for either ATX or DC-in power supplies. Please do not use two kinds of power supplies at the same time! Doing so may damage the motherboard components and devices. When you use the DC-in power adapter, please use the onboard SATA power connector to get the power for HDDs.

Chapter 2 Installation

This is a Mini-ITX form factor motherboard. Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.

Pre-installation Precautions

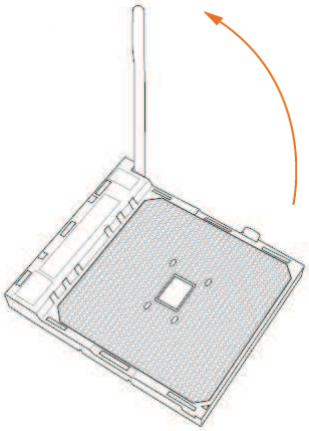
Take note of the following precautions before you install motherboard components or change any motherboard settings.

- Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so may cause physical injuries to you and damages to motherboard components.
- In order to avoid damage from static electricity to the motherboard's components, NEVER place your motherboard directly on a carpet. Also remember to use a grounded wrist strap or touch a safety grounded object before you handle the components.
- Hold components by the edges and do not touch the ICs.
- Whenever you uninstall any components, place them on a grounded anti-static pad or in the bag that comes with the components.
- When placing screws to secure the motherboard to the chassis, please do not over-tighten the screws! Doing so may damage the motherboard.

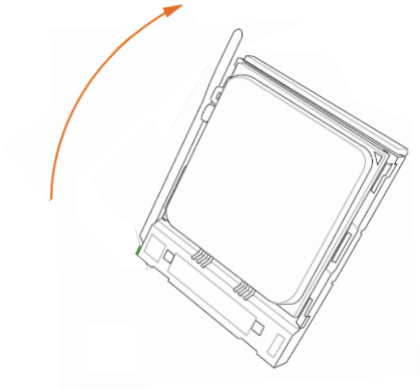
2.1 Installing the CPU

Unplug all power cables before installing the CPU.

1



2



3

2.2 Installing the CPU Fan and Heatsink

After you install the CPU into this motherboard, it is necessary to install a larger heatsink and cooling fan to dissipate heat. You also need to spray thermal grease between the CPU and the heatsink to improve heat dissipation. Make sure that the CPU and the heatsink are securely fastened and in good contact with each other. Then connect the CPU fan to the CPU FAN connector. For proper installation, please kindly refer to the instruction manuals of the CPU fan and the heatsink.

Please turn off the power or remove the power cord before changing a CPU or heatsink.

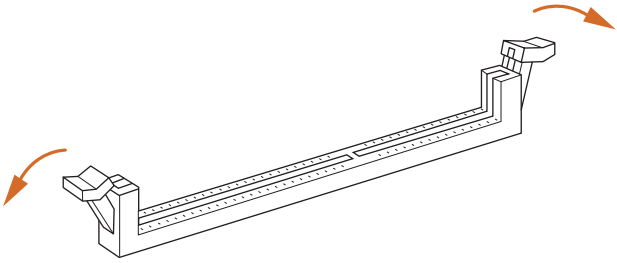
2.3 Installing Memory Modules (DIMM)

This motherboard provides two 240-pin DDR3 (Double Data Rate 3) DIMM slots.

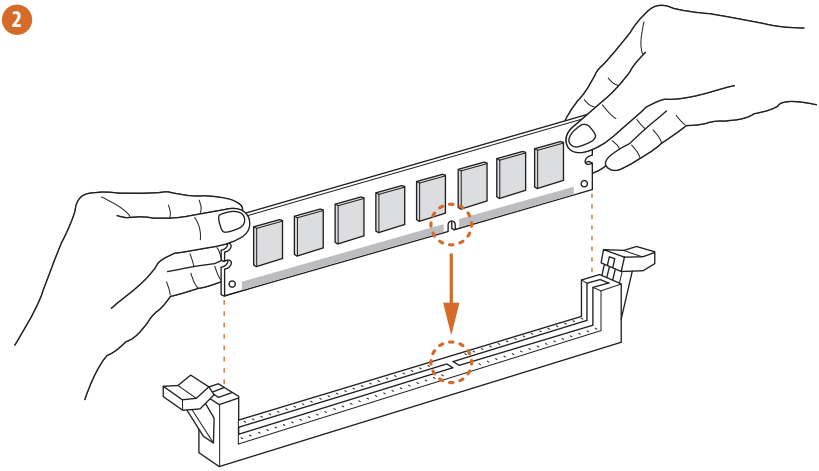
It is not allowed to install a DDR or DDR2 memory module into a DDR3 slot; otherwise, this motherboard and DIMM may be damaged.

The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation.

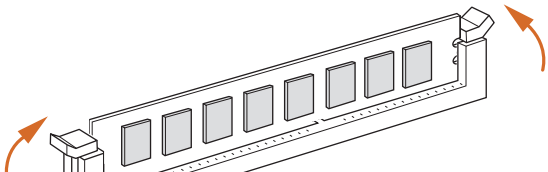
1



2



3



2.4 Expansion Slots (PCI Express Slots)

There are 2 PCI Express slots on the motherboard.

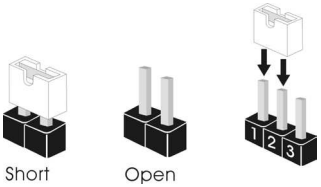
Before installing an expansion card, please make sure that the power supply is switched off or the power cord is unplugged. Please read the documentation of the expansion card and make necessary hardware settings for the card before you start the installation.

PCIe slots:

PCIE1 (PCIe 2.0 x16 slot) is used for PCI Express x4 lane width graphics cards.
MPCIE1 (mini-PCIe slot) is used for WiFi module.

2.5 Jumpers Setup

The illustration shows how jumpers are setup. When the jumper cap is placed on the pins, the jumper is "Short". If no jumper cap is placed on the pins, the jumper is "Open". The illustration shows a 3-pin jumper whose pin1 and pin2 are "Short" when a jumper cap is placed on these 2 pins.



Clear CMOS Jumper (CLRCMOS1) (see p.10, No. 18)	1_2 Default	2_3 Clear CMOS

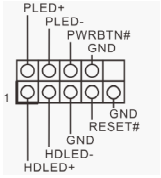
CLRCMOS1 allows you to clear the data in CMOS. To clear and reset the system parameters to default setup, please turn off the computer and unplug the power cord from the power supply. After waiting for 15 seconds, use a jumper cap to short pin2 and pin3 on CLRCMOS1 for 5 seconds. However, please do not clear the CMOS right after you update the BIOS. If you need to clear the CMOS when you just finish updating the BIOS, you must boot up the system first, and then shut it down before you do the clear-CMOS action. Please be noted that the password, date, time, and user default profile will be cleared only if the CMOS battery is removed.

If you clear the CMOS, the case open may be detected. Please adjust the BIOS option "Clear Status" to clear the record of previous chassis intrusion status.

2.6 Onboard Headers and Connectors

Onboard headers and connectors are NOT jumpers. Do NOT place jumper caps over these headers and connectors. Placing jumper caps over the headers and connectors will cause permanent damage to the motherboard.

System Panel Header
(9-pin PANEL1)
(see p.10, No. 12)



Connect the power switch, reset switch and system status indicator on the chassis to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables.

PWRBTN (Power Switch):
Connect to the power switch on the chassis front panel. You may configure the way to turn off your system using the power switch.

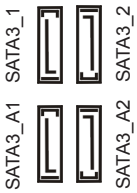
RESET (Reset Switch):
Connect to the reset switch on the chassis front panel. Press the reset switch to restart the computer if the computer freezes and fails to perform a normal restart.

PLED (System Power LED):
Connect to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED keeps blinking when the system is in S3 sleep state. The LED is off when the system is in S4 sleep state or powered off (S5).

HDLED (Hard Drive Activity LED):
Connect to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data.

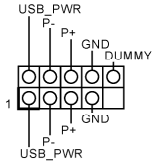
The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly.

Serial ATA3 Connectors
(SATA3_1:
see p.10, No. 8)
(SATA3_2:
see p.10, No. 9)
(SATA3_A1:
see p.10, No. 11)
(SATA3_A2:
see p.10, No. 10)



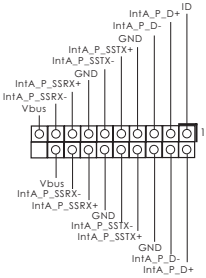
These four SATA3 connectors support SATA data cables for internal storage devices with up to 6.0 Gb/s data transfer rate.

USB 2.0 Headers
(9-pin USB2_3)
(see p.10, No. 19)
(9-pin USB4_5)
(see p.10, No. 17)



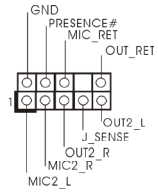
Besides two USB 2.0 ports on the I/O panel, there are two headers on this motherboard. Each USB 2.0 header can support two ports.

USB 3.0 Header
(19-pin USB3_2_3)
(see p.10, No. 14)



Besides two USB 3.0 ports on the I/O panel, there is one header on this motherboard. This USB 3.0 header can support two ports.

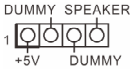
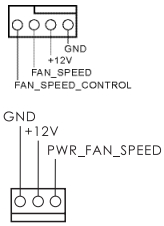
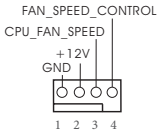
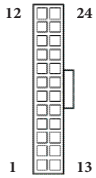
Front Panel Audio Header
(9-pin HD_AUDIO1)
(see p.10, No. 20)



This header is for connecting audio devices to the front audio panel.

English

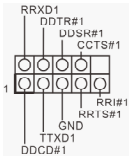
1. *High Definition Audio supports Jack Sensing, but the panel wire on the chassis must support HDA to function correctly. Please follow the instructions in our manual and chassis manual to install your system.*
2. *If you use an AC'97 audio panel, please install it to the front panel audio header by the steps below:*
   A. Connect Mic_IN (MIC) to MIC2_L.
   B. Connect Audio_R (RIN) to OUT2_R and Audio_L (LIN) to OUT2_L.
   C. Connect Ground (GND) to Ground (GND).
   D. MIC_RET and OUT_RET are for the HD audio panel only. You don't need to connect them for the AC'97 audio panel.
   E. To activate the front mic, go to the "FrontMic" Tab in the Realtek Control panel and adjust "Recording Volume".

Chassis Speaker Header (4-pin SPEAKER1) (see p.10, No. 3)		Please connect the chassis speaker to this header.
Chassis and Power Fan Connectors (4-pin CHA_FAN1) (see p.10, No. 13) (3-pin PWR_FAN1) (see p.10, No. 2)		Please connect fan cables to the fan connectors and match the black wire to the ground pin.
CPU Fan Connector (4-pin CPU_FAN1) (see p.10, No. 1)		This motherboard provides a 4-Pin CPU fan (Quiet Fan) connector. If you plan to connect a 3-Pin CPU fan, please connect it to Pin 1-3.
ATX Power Connector (24-pin ATXPWR1) (see p.10, No. 5)		This motherboard provides a 24-pin ATX power connector. To use a 20-pin ATX power supply, please plug it along Pin 1 and Pin 13.

SATA Power Connector
(SATA_POW1)
(see p.10, No. 7)

Please connect a SATA power cable.

Serial Port Header
(9-pin COM1)
(see p.10, No. 16)

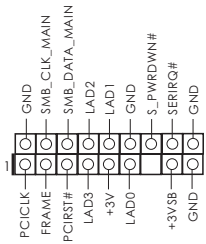


This COM1 header supports a serial port module.

Chassis Intrusion Header
(2-pin CI1)
(see p.10, No. 6)

This motherboard supports CASE OPEN detection feature that detects if the chassis cove has been removed. This feature requires a chassis with chassis intrusion detection design.

TPM Header
(17-pin TPMS1)
(see p.10, No. 15)



This connector supports Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.

Chapter 3 Software and Utilities Operation

3.1 Installing Drivers

The Support CD that comes with the motherboard contains necessary drivers and useful utilities that enhance the motherboard's features.

Running The Support CD

To begin using the support CD, insert the CD into your CD-ROM drive. The CD automatically displays the Main Menu if "AUTORUN" is enabled in your computer. If the Main Menu does not appear automatically, locate and double click on the file "ASRSETUP.EXE" in the Support CD to display the menu.

Drivers Menu

The drivers compatible to your system will be auto-detected and listed on the support CD driver page. Please click **Install All** or follow the order from top to bottom to install those required drivers. Therefore, the drivers you install can work properly.

Utilities Menu

The Utilities Menu shows the application software that the motherboard supports. Click on a specific item then follow the installation wizard to install it.

To improve Windows 7 compatibility, please download and install the following hot fix provided by Microsoft.
"KB2720599": http://support.microsoft.com/kb/2720599/en-us

3.2 A-Tuning

A-Tuning is ASRock's multi purpose software suite with a new interface, more new features and improved utilities, including XFast RAM, Dehumidifier, Good Night LED, FAN-Tastic Tuning and a whole lot more.

3.2.1 Installing A-Tuning

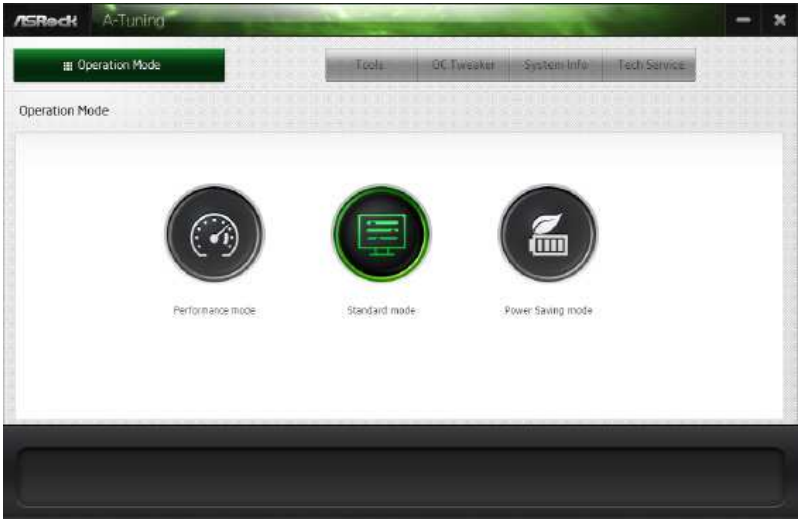
When you install the all-in-one driver to your system from ASRock's support CD, A-Tuning will be auto-installed as well. After the installation, you will find the icon "A-Tuning" on your desktop. Double-click the "A-Tuning" icon, A-Tuning main menu will pop up.

3.2.2 Using A-Tuning

There are five sections in A-Tuning main menu: Operation Mode, Tools, OC Tweaker, System Info and Tech Service.

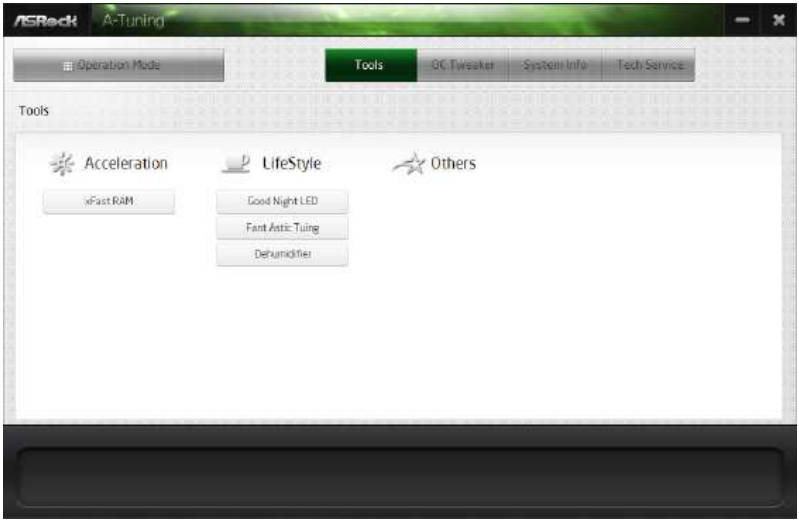
Operation Mode

Choose an operation mode for your computer.



Tools

Various tools and utilities.



XFast RAM

Boost the system's performance and extend the HDD's or SDD's lifespan! Create a hidden partition, then assign which files should be stored in the RAM drive.

Fast Boot

Fast Boot minimizes your computer's boot time. Please note that Ultra Fast mode is only supported by Windows 8 and the VBIOS must support UEFI GOP if you are using an external graphics card.

OMG

Schedule the starting and ending hours of Internet access granted to other users. Place X marks on the time table to disable the Internet.

Good Night LED

Switch off the Power/LAN LEDs when the system is on, and automatically switch off the Power and LAN LEDs when the system enters into Standby/Hibernation mode.

FAN-Tastic Tuning

Configure up to five different fan speeds using the graph. The fans will automatically shift to the next speed level when the assigned temperature is met.

Dehumidifier

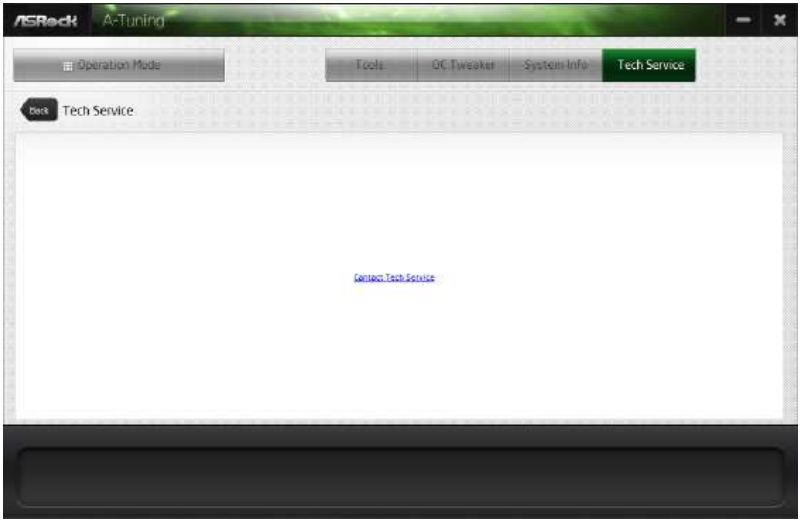
Prevent motherboard damages due to dampness. Enable this function and configure the period of time until the computer powers on, and the duration of the dehumidifying process.

System Info

View information about the system.

Tech Service

Contact Tech Service.



3.3 Start8

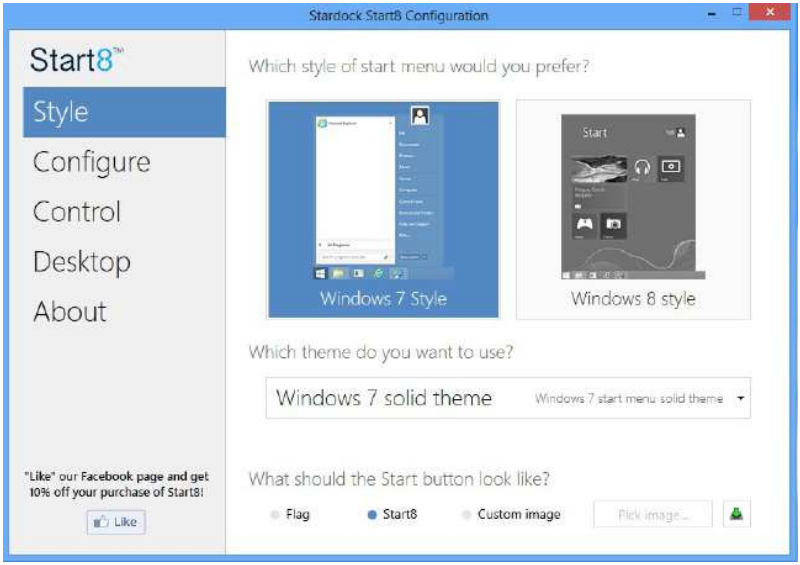
For those Windows 8 users who miss the Start Menu, Start8 is an ideal solution that brings back the familiar Start Menu along with added customizations for greater efficiency.

3.3.1 Installing Start8

Install **Start8**, which is located in the folder at the following path of the Support CD: **\ ASRock Utility > Start8**.

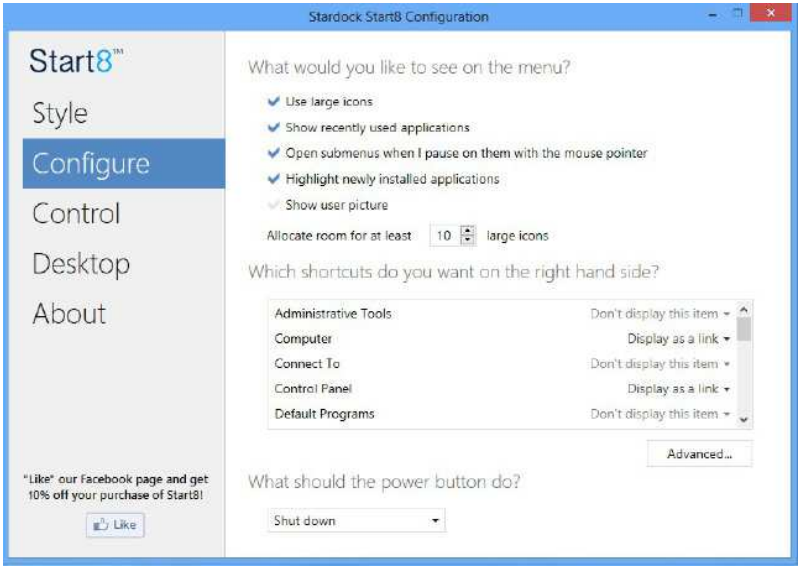
3.3.2 Configuring Start8

Style



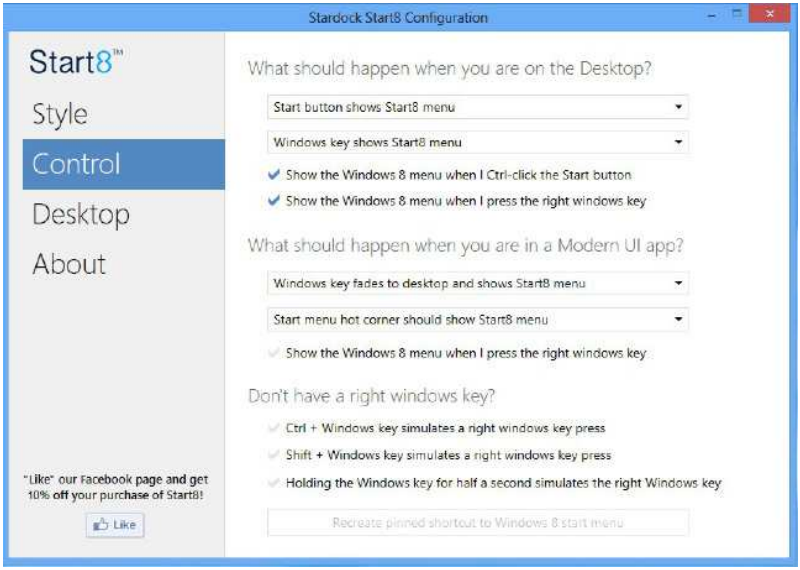
Select between the Windows 7 style and Windows 8 style Start Menu. Then select the theme of the Start Menu and customize the style of the Start icon.

Configure


Stardock Start8 Configuration
Start8
Style
Configure
Control
Desktop
About
"Like" our Facebook page and get 10% off your purchase of Start8!
Like
What would you like to see on the menu?
Use large icons
Show recently used applications
Open submenus when I pause on them with the mouse pointer
Highlight newly installed applications
Show user picture
Allocate room for at least 10 large icons
Which shortcuts do you want on the right hand side?
Administrative Tools Don't display this item
Computer Display as a link
Connect To Don't display this item
Control Panel Display as a link
Default Programs Don't display this item
Advanced...
What should the power button do?
Shut down

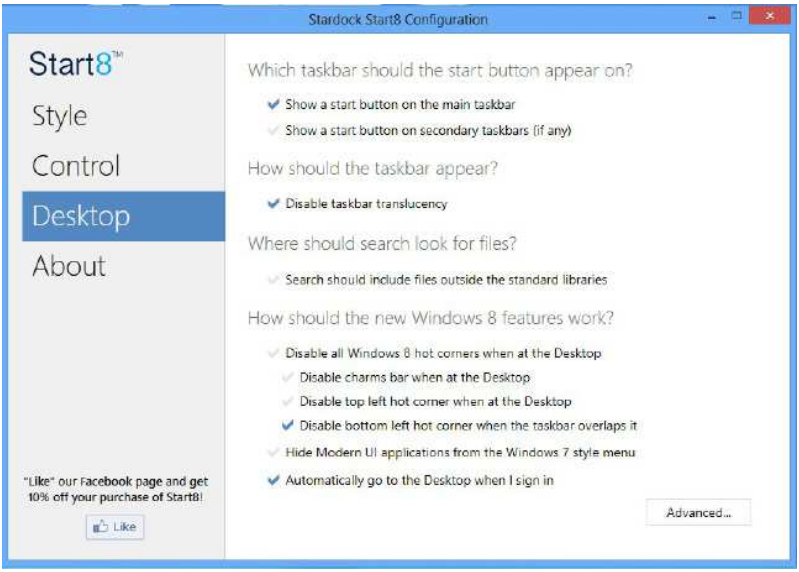
Configure provides configuration options, including icon sizes, which shortcuts you want Start Menu to display, quick access to recently used apps, the functionality of the power button, and more.

Control


Stardock Start8 Configuration
Start8
Style
Control
Desktop
About
"Like" our Facebook page and get 10% off your purchase of Start8!
Like
What should happen when you are on the Desktop?
Start button shows Start8 menu
Windows key shows Start8 menu
Show the Windows 8 menu when I Ctrl-click the Start button
Show the Windows 8 menu when I press the right windows key
What should happen when you are in a Modern UI app?
Windows key fades to desktop and shows Start8 menu
Start menu hot corner should show Start8 menu
Show the Windows 8 menu when I press the right windows key
Don't have a right windows key?
Ctrl + Windows key simulates a right windows key press
Shift + Windows key simulates a right windows key press
Holding the Windows key for half a second simulates the right Windows key
Recreate pinned shortcut to Windows 8 start menu

Control lets you configure what a click on the start button or a press on the Windows key does.

Desktop


Stardock Start8 Configuration
Start8
Style
Control
Desktop
About
"Like" our Facebook page and get 10% off your purchase of Start8!
Like
Which taskbar should the start button appear on?
Show a start button on the main taskbar
Show a start button on secondary taskbars (if any)
How should the taskbar appear?
Disable taskbar translucency
Where should search look for files?
Search should include files outside the standard libraries
How should the new Windows 8 features work?
Disable all Windows 8 hot corners when at the Desktop
Disable charms bar when at the Desktop
Disable top left hot corner when at the Desktop
Disable bottom left hot corner when the taskbar overlaps it
Hide Modern UI applications from the Windows 7 style menu
Automatically go to the Desktop when I sign in
Advanced...

Desktop allows you to disable the hot corners when you are working on the desktop. It also lets you choose whether or not the system boots directly into desktop mode and bypass the Metro user interface.

About

Displays information about Start8.

Chapter 4 UEFI SETUP UTILITY

4.1 Introduction

ASRock Interactive UEFI is a blend of system configuration tools, cool sound effects and stunning visuals. Not only will it make BIOS setup less difficult but also a lot more amusing. This section explains how to use the UEFI SETUP UTILITY to configure your system. You may run the UEFI SETUP UTILITY by pressing <F2> or <Del> right after you power on the computer, otherwise, the Power-On-Self-Test (POST) will continue with its test routines. If you wish to enter the UEFI SETUP UTILITY after POST, restart the system by pressing <Ctl> + <Alt> + <Delete>, or by pressing the reset button on the system chassis. You may also restart by turning the system off and then back on.

Because the UEFI software is constantly being updated, the following UEFI setup screens and descriptions are for reference purpose only, and they may not exactly match what you see on your screen.

4.1.1 UEFI Menu Bar

The top of the screen has a menu bar with the following selections:

Main	For setting system time/date information
OC Tweaker	For overclocking configurations
Advanced	For advanced system configurations
Tool	Useful tools
H/W Monitor	Displays current hardware status
Boot	For configuring boot settings and boot priority
Security	For security settings
Exit	Exit the current screen or the UEFI Setup Utility

4.1.2 Navigation Keys

Use <←→> key or <→> key to choose among the selections on the menu bar, and use < ↑ > key or < ↓ > key to move the cursor up or down to select items, then press <Enter> to get into the sub screen. You can also use the mouse to click your required item.

Please check the following table for the descriptions of each navigation key.

Navigation Key(s)	Description
+ / -	To change option for the selected items
<Tab>	Switch to next function
<PGUP>	Go to the previous page
<PGDN>	Go to the next page
<HOME>	Go to the top of the screen
<END>	Go to the bottom of the screen
<F1>	To display the General Help Screen
<F7>	Discard changes and exit the SETUP UTILITY
<F9>	Load optimal default values for all the settings
<F10>	Save changes and exit the SETUP UTILITY
<F12>	Print screen
<ESC>	Jump to the Exit Screen or exit the current screen

4.2 Main Screen

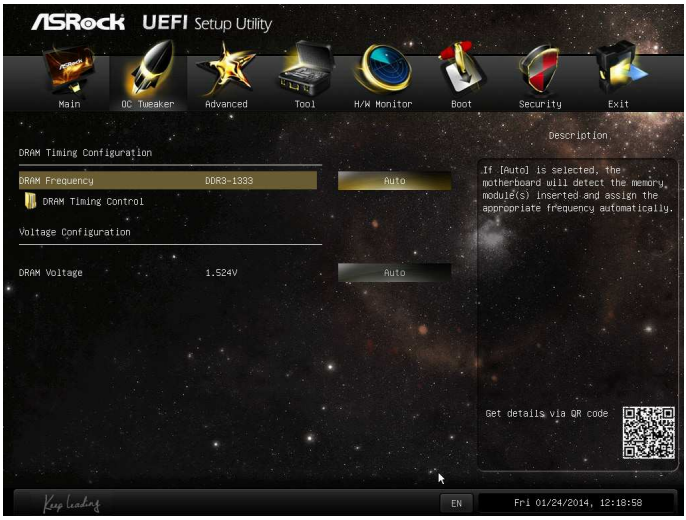
When you enter the UEFI SETUP UTILITY, the Main screen will appear and display the system overview.

Active Page on Entry

Select the default page when entering the UEFI setup utility.

4.3 OC Tweaker Screen

In the OC Tweaker screen, you can set up overclocking features.



Because the UEFI software is constantly being updated, the following UEFI setup screens and descriptions are for reference purpose only, and they may not exactly match what you see on your screen.

DRAM Timing Configuration

DRAM Frequency

If [Auto] is selected, the motherboard will detect the memory module(s) inserted and assign the appropriate frequency automatically.

DRAM Timing Control

Power Down Enable

Use this item to enable or disable DDR power down mode.

Bank Interleaving

Interleaving allows memory accesses to be spread out over banks on the same node, or accross nodes, decreasing access contention.

CAS# Latency (tCL)

The time between sending a column address to the memory and the beginning of the data in response.

RAS# to CAS# Delay (tRCD)

The number of clock cycles required between the opening of a row of memory and accessing columns within it.

Row Precharge Time (tRP)

The number of clock cycles required between the issuing of the precharge command and opening the next row.

RAS# Active Time (tRAS)

The number of clock cycles required between a bank active command and issuing the precharge command.

Command Rate (CR)

The delay between when a memory chip is selected and when the first active command can be issued.

RAS# Cycle Time (tRC)

Use this item to change RAS# Cycle Time (tRC) Auto/Manual setting.

Write Recovery Time (tWR)

The amount of delay that must elapse after the completion of a valid write operation, before an active bank can be precharged.

Refresh Cycle Time (tRFC)

The number of clocks from a Refresh command until the first Activate command to the same rank.

RAS to RAS Delay (tRRD)

The number of clocks between two rows activated in different banks of the same rank.

Write to Read Delay (tWTR)

The number of clocks between the last valid write operation and the next read command to the same internal bank.

Read to Precharge (tRTP)

The number of clocks that are inserted between a read command to a row pre-charge command to the same rank.

Four Activate Window (tFAW)

The time window in which four activates are allowed the same rank.

Voltage Configuration

DRAM Voltage

Use this to select DRAM Voltage. The default value is [Auto].

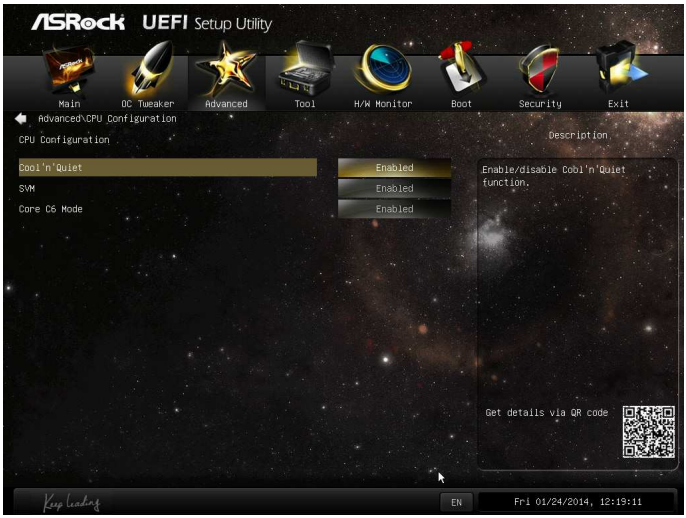
4.4 Advanced Screen

In this section, you may set the configurations for the following items: CPU Configuration, Chipset Configuration, Storage Configuration, Super IO Configuration, ACPI Configuration, USB Configuration and Trusted Computing.

Setting wrong values in this section may cause the system to malfunction.

English

4.4.1 CPU Configuration



Cool 'n' Quiet

Use this item to enable or disable AMD's Cool 'n' Quiet™ technology. The default value is [Enabled]. Configuration options: [Enabled] and [Disabled]. If you install Windows® 8 / 7 / XP and want to enable this function, please set this item to [Enabled]. Please note that enabling this function may reduce CPU voltage and memory frequency, and lead to system stability or compatibility issue with some memory modules or power supplies. Please set this item to [Disable] if above issue occurs.

SVM

When this option is set to [Enabled], a VMM (Virtual Machine Architecture) can utilize the additional hardware capabilities provided by AMD-V. The default value is [Enabled]. Configuration options: [Enabled] and [Disabled].

Core C6 Mode

Use this item to enable or disable Core C6 mode. The default value is [Enabled].

4.4.2 Chipset Configuration

Share Memory

Configure the size of memory that is allocated to the integrated graphics processor when the system boots up.

Primary Graphics Adapter

Select a primary VGA.

Onboard HDMI HD Audio

Enable audio for the onboard digital outputs.

Onboard HD Audio

Enable/disable onboard HD audio. Set to Auto to enable onboard HD audio and automatically disable it when a sound card is installed.

Front Panel

Enable/disable front panel HD audio.

On/Off Play

With ASRock On/Off Play users can connect their portable audio devices, such as an MP3 player or a mobile phone to the PC and listen to music through the computer's speakers even when the computer is turned off.

Onboard LAN

Enable or disable the onboard network interface controller.

Restore on AC/Power Loss

Select the power state after a power failure. If [Power Off] is selected, the power will remain off when the power recovers. If [Power On] is selected, the system will start to boot up when the power recovers.

Good Night LED

By enabling Good Night LED, the Power/LAN LEDs will be switched off when the system is on. It will also automatically switch off the Power and LAN LEDs when the system enters into Standby/Hibernation mode.

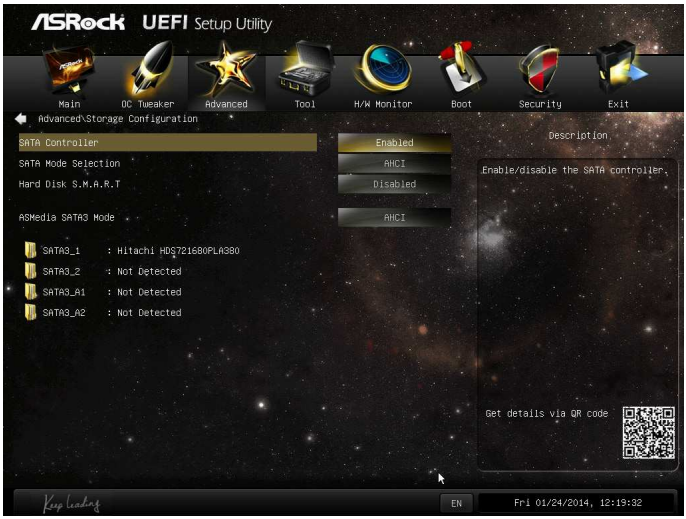
Spread Spectrum

Enable Spread Spectrum to reduce electromagnetic interference for passing EMI tests.

HDMI/DP Switch

Select to enable HDMI or DisplayPort.

4.4.3 Storage Configuration



SATA Controller(s)

Enable/disable the SATA controllers.

SATA Mode Selection

IDE: For better compatibility.

AHCI: Supports new features that improve performance.

AHCI (Advanced Host Controller Interface) supports NCQ and other new features that will improve SATA disk performance but IDE mode does not have these advantages.

Hard Disk S.M.A.R.T.

S.M.A.R.T stands for Self-Monitoring, Analysis, and Reporting Technology. It is a monitoring system for computer hard disk drives to detect and report on various indicators of reliability.

ASMedia SATA3 Mode

IDE: For better compatibility.

AHCI: Supports new features that improve performance.

4.4.4 Super IO Configuration

Serial Port

Enable or disable the Serial port.

Serial Port Address

Select the address of the Serial port.

English

4.4.5 ACPI Configuration

Suspend to RAM

It is recommended to select auto for ACPI S3 power saving.

Check Ready Bit

Enable to enter the operating system after S3 only when the hard disk is ready, this is recommended for better system stability.

Deep Sleep

Configure deep sleep mode for power saving when the computer is shut down.

ACPI HPET Table

Enable the High Precision Event Timer for better performance and to pass WHQL tests.

PS/2 Keyboard Power On

Allow the system to be waked up by a PS/2 Keyboard.

PCI Devices Power On

Allow the system to be waked up by a PCI device and enable wake on LAN.

Ring-In Power On

Allow the system to be waked up by onboard COM port modem Ring-In signals.

RTC Alarm Power On

Allow the system to be waked up by the real time clock alarm. Set it to By OS to let it be handled by your operating system.

USB Keyboard/Remote Power On

Allow the system to be waked up by an USB keyboard or remote controller.

USB Mouse Power On

Allow the system to be waked up by an USB mouse.

4.4.6 USB Configuration

USB Controller

Enable or disable all the USB ports.

USB 3.0 Controller

Enable or disable all the USB 3.0 ports.

Legacy USB Support

Enable or disable Legacy OS Support for USB 2.0 devices. If you encounter USB compatibility issues it is recommended to disable legacy USB support. Select UEFI Setup Only to support USB devices under the UEFI setup and Windows/Linux operating systems only.

Legacy USB 3.0 Support

Enable or disable Legacy OS Support for USB 3.0 devices.

4.4.7 Trusted Computing

Security Device Support

Enable to activate Trusted Platform Module (TPM) security for your hard disk drives.

4.5 Tools

ASRock UEFI Setup Utility
Main
OC Tweaker
Advanced
Tool
H/W Monitor
Boot
Security
Exit
OMG(Online Management Guard)
UEFI Tech Service
Easy Driver Installer
UEFI Update Utility
Instant Flash
Internet Flash - DHCP (Auto IP), Europe
Network Configuration
Dehumidifier Function
Disabled
Would you like to save current setting as user defaults?
User Profile 1: [User Default 1]
Save User Default
User Profile 2: [User Default 2]
Save User Default
Description
Administrators are able to establish an internet curfew or restrict internet access at specified times via OMG. You may schedule the starting and ending hours of internet access granted to other users. In order to prevent users from bypassing OMG, guest accounts without permission to modify the system time are required.
Get details via QR code
EN
Fri 01/24/2014, 12:19:48

OMG (Online Management Guard)

Administrators are able to establish an internet curfew or restrict internet access at specified times via OMG. You may schedule the starting and ending hours of internet access granted to other users. In order to prevent users from bypassing OMG, guest accounts without permission to modify the system time are required.

UEFI Tech Service

Contact ASRock Tech Service if you are having trouble with your PC. Please setup network configuration before using UEFI Tech Service.

Easy Driver Installer

For users that don't have an optical disk drive to install the drivers from our support CD, Easy Driver Installer is a handy tool in the UEFI that installs the LAN driver to your system via an USB storage device, then downloads and installs the other required drivers automatically.

Instant Flash

Save UEFI files in your USB storage device and run Instant Flash to update your UEFI.

Internet Flash

ASRock Internet Flash downloads and updates the latest UEFI firmware version from our servers for you. Please setup network configuration before using Internet Flash.

*For BIOS backup and recovery purpose, it is recommended to plug in your USB pen drive before using this function.

Network Configuration

Use this to configure internet connection settings for Internet Flash.

Internet Setting

Enable or disable sound effects in the setup utility.

UEFI Download Server

Select a server to download the UEFI firmware.

Dehumidifier Function

If Dehumidifier Function is enabled, the computer will power on automatically to dehumidify the system after entering S4/S5 state.

Dehumidifier Period

Configure the period of time until the computer powers on and enables Dehumidifier after entering S4/S5 state.

Dehumidifier Duration

Configure the duration of the dehumidifying process before it returns to S4/S5 state.

Dehumidifier CPU Fan Setting

Configure the speed of the CPU fan while Dehumidifier is enabled. The higher the value, the faster the fan speed.

Max: 255

Min: 1

Save User Default

Type a profile name and press enter to save your settings as user default.

Load User Default

Load previously saved user defaults.

4.6 Hardware Health Event Monitoring Screen

This section allows you to monitor the status of the hardware on your system, including the parameters of the CPU temperature, motherboard temperature, fan speed and voltage.

CPU Fan 1 Type

Select a fan type for CPU Fan 1.

CPU Fan 1 Setting

Select a fan mode for CPU Fan 1, or choose Customize to set 5 CPU temperatures and assign a respective fan speed for each temperature.

Chassis Fan 1 Setting

Select a fan mode for Chassis Fan 1, or choose Customize to set 5 CPU temperatures and assign a respective fan speed for each temperature.

Power Fan 1 Setting

Select a fan mode for Power Fan 1, or choose Customize to set 5 CPU temperatures and assign a respective fan speed for each temperature.

Case Open Feature

Enable or disable Case Open Feature to detect whether the chassis cover has been removed.

4.7 Boot Screen

This section displays the available devices on your system for you to configure the boot settings and the boot priority.

Fast Boot

Fast Boot minimizes your computer's boot time. In fast mode you may not boot from an USB storage device. Ultra Fast mode is only supported by Windows 8 and the VBIOS must support UEFI GOP if you are using an external graphics card. Please notice that Ultra Fast mode will boot so fast that the only way to enter this UEFI Setup Utility is to Clear CMOS or run the Restart to UEFI utility in Windows.

Boot From Onboard LAN

Allow the system to be waked up by the onboard LAN.

Setup Prompt Timeout

Configure the number of seconds to wait for the setup hot key.

Bootup Num-Lock

Select whether Num Lock should be turned on or off when the system boots up.

Full Screen Logo

Enable to display the boot logo or disable to show normal POST messages.

AddOn ROM Display

Enable AddOn ROM Display to see the AddOn ROM messages or configure the AddOn ROM if you've enabled Full Screen Logo. Disable for faster boot speed.

Boot Failure Guard

If the computer fails to boot for a number of times the system automatically restores the default settings.

Boot Failure Guard Count

Configure the number of attempts to boot until the system automatically restores the default settings.

CSM (Compatibility Support Module)

CSM

Enable to launch the Compatibility Support Module. Please do not disable unless you're running a WHCK test. If you are using Windows 8 64-bit and all of your devices support UEFI, you may also disable CSM for faster boot speed.

Launch PXE OpROM Policy

Select UEFI only to run those that support UEFI option ROM only. Select Legacy only to run those that support legacy option ROM only. Do not launch?

Launch Storage OpROM Policy

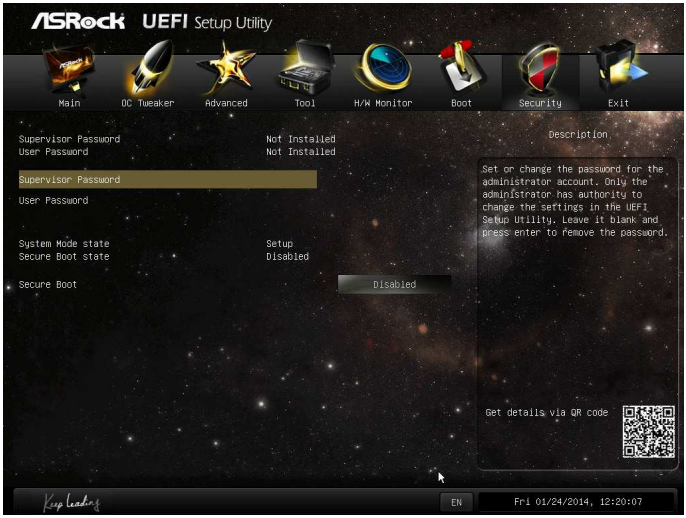
Select UEFI only to run those that support UEFI option ROM only. Select Legacy only to run those that support legacy option ROM only. Do not launch?

Launch Video OpROM Policy

Select UEFI only to run those that support UEFI option ROM only. Select Legacy only to run those that support legacy option ROM only. Do not launch?

4.8 Security Screen

In this section you may set or change the supervisor/user password for the system. You may also clear the user password.



Supervisor Password

Set or change the password for the administrator account. Only the administrator has authority to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

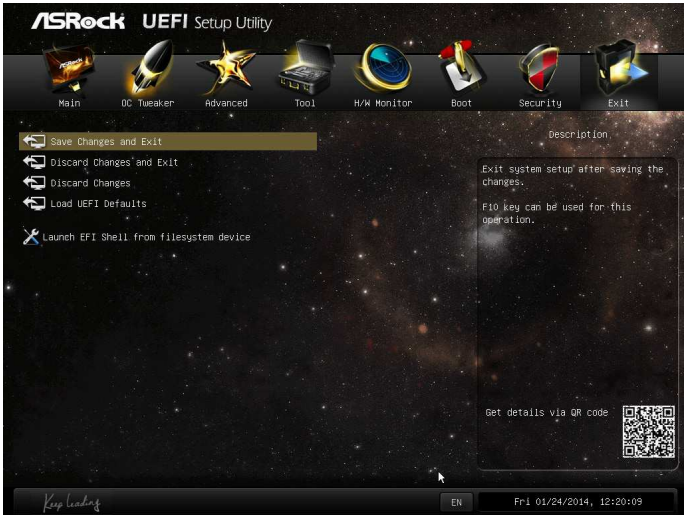
User Password

Set or change the password for the user account. Users are unable to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

Secure Boot

Enable to support Windows 8 Secure Boot.

4.9 Exit Screen



Save Changes and Exit

When you select this option the following message, "Save configuration changes and exit setup?" will pop out. Select [OK] to save changes and exit the UEFI SETUP UTILITY.

Discard Changes and Exit

When you select this option the following message, "Discard changes and exit setup?" will pop out. Select [OK] to exit the UEFI SETUP UTILITY without saving any changes.

Discard Changes

When you select this option the following message, "Discard changes?" will pop out. Select [OK] to discard all changes.

Load UEFI Defaults

Load UEFI default values for all options. The F9 key can be used for this operation.

Launch EFI Shell from filesystem device

Copy shellx64.efi to the root directory to launch EFI Shell.

Contact Information

If you need to contact ASRock or want to know more about ASRock, you're welcome to visit ASRock's website at http://www.asrock.com; or you may contact your dealer for further information. For technical questions, please submit a support request form at http://www.asrock.com/support/tsd.asp

ASRock Incorporation

2F., No.37, Sec. 2, Jhongyang S. Rd., Beitou District,

Taipei City 112, Taiwan (R.O.C.)

ASRock EUROPE B.V.

Bijsterhuizen 3151

6604 LV Wijchen

The Netherlands

Phone: +31-24-345-44-33

Fax: +31-24-345-44-38

ASRock America, Inc.

13848 Magnolia Ave, Chino, CA91710

U.S.A.

Phone: +1-909-590-8308

Fax: +1-909-590-1026